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Cross-country comparison of intellectual capital performance and its impact on financial performance of commercial banks in GCC countries

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Abstract

Purpose – The purpose of this paper is to explore the intellectual capital (IC) performance of banks in Gulf Cooperation Council (GCC) countries and to empirically investigate if IC has an impact on financial performance as well as to identify the IC components that may be the drivers of the traditional indicators of bank success.

Design/methodology/approach – The empirical data are drawn from banks' annual reports over the three-year period of 2008 to 2010. Ordinary least squares regression analysis is constructed to examine the relationships between IC and the banks' financial performance indicators. Pulic's value-added intellectual coefficient method (VAIC) is applied to measure IC performance.

Findings – Empirical findings, after controlling for bank size and global financial crisis, indicate that IC is positively associated with bank financial performance indicators in all GCC countries. However, when VAIC is split into its three components, the relationships between these components and bank financial performance indicators are varied.

Research limitations/implications – The main limitation of this study is the use of IC measurement model. Its basic advantage (simplicity and ease of use) is also its main limitation. The main problem is measuring the contribution of something which is not physical and cannot be easily quantified. The key issue is that the value created by IC is indirect. However, at present, no perfect solution is available for intellectual capital measurement, as the area is still exploring the best possible solutions.

Practical implications – The results may extend the understanding of the role of IC in banking sector in GCC region and may give inputs to managers of GCC banks to structure relevant strategies to obtain, utilize, develop and retain IC. The findings also could help policy makers in GCC to formulate and implement policies for establishing a resilient banking sector.

Originality/value – This study adds to the literature by extending the knowledge of IC performance and its utilization for increasing the financial performance of GCC banks. There has only been one previous empirical study that explores the IC and its relationship with the traditional measures of bank performance in GCC region (only in Bahrain). It is the first comparative study across GCC countries.

Keywords Performance management, GCC banks, Intellectual capital

Paper type Research paper

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1. Introduction

The rise of the "knowledge-based economy", which is principally driven by intangible resources and competencies, has led to an increased interest in intellectual capital (IC). There is a world-wide recognition that the traditional bases sources of competitive advantage that depend on tangible assets in creating firm value and sustaining competitive advantage begun to erode. In the new economic era, IC, the sum of knowledge-related resources, represents the wealth of ideas, abilities, infrastructures and relations that become the most important business success factor and the main factor in creating value and sustaining competitive advantage of firms (Andriessen, 2004).

According to the knowledge-based view (KBV), IC is more likely to contribute to a firm's attaining and sustaining superior performance than tangible resources (Reed *et al.*, 2006). According to this theoretical model, in contrast to tangible resources which are generic resources, easily imitable and substitutable and can be easily purchased and sold on the open market, only IC-based resources that fulfill all the required attributes to be a source of competitive advantage which are valuable, rare, inimitable and non-substitutable (Reed *et al.*, 2006). Accordingly, the potential for creating competitive advantage and long-term value lies more importantly in the efficient management of IC than in tangible assets. This is particularly so in knowledge-intensive industries such as banks.

Banks are regarded as knowledge-intensive firms, as its key resources are intangible and most of their activities are assimilated to work of an intellectual nature (Mention and Bontis, 2013). According to Mention and Bontis (2013), banking operations usually involve close interaction with customers and rely, to a great extent, on the integration of information and communication technologies (ICTs) for the development of new products and services. Thus, an efficient utilization of IC is more crucial for accomplishing success in banking than other industries as delivering of high quality services by a bank depends on its investment in items related to IC such as its human resources, brand building, systems and processes (Ahuja and Ahuja, 2012).

In Arab Gulf Cooperation Council (GCC) countries, including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and UAE, banking sector occupies a special importance in relation to GCC's aspiration of becoming a knowledge based economies and reduce their highly dependency on the export of oil and gas for external revenues. Since the mid-1990s, GCC countries have shown a general commitment toward the process of transforming from the rent-seeking economies to knowledge-based economies.

As a knowledge-based sector, the banking sector is considered to be one of the most economically viable diversification options (Al-Obaidan, 2008). The banking sector in most of the GCC countries is the second highest contributor to the country's GDP after the oil and gas sector and remains the cornerstone of the non-oil and gas GDP growth in its economy. However, IC performance of banks in the GCC region is in question, and little research has been documented.

Several studies have been conducted to measure IC and for understanding the relationship between IC and firm performance around the world and provided some mixed and inconclusive results (Nimtrakoon, 2015; Mehralian *et al.*, 2012; Zeghal and Maaloul, 2010; Firer and Williams, 2003). Nevertheless, just few researchers have focused on this approach in GCC region. There is only one published study conducted by Ku Ismail and Abdul Karem (2011) to examine the relation between the traditional

measures of firm profitability and IC in Bahraini banking sector for the period 2005-2007. This is the case in spite of the interests of the GCC countries in IC and expending their knowledge-based sectors in line with their efforts to diversify their economy and reducing the dependency on the oil and gas sector.

Thus, there is a strong motivation to study IC and its association with bank's financial performance in GCC region. This research therefore seeks to fill this gap in the literature. The primary objectives of this study are to evaluate and compare IC efficiency of banks listed in GCC countries using the value added intellectual coefficient (VAIC) methodology developed by Pulic (1998), to empirically examine the association between IC performance and traditional measures of GCC bank performance and to analyze the relative importance of various components of IC on the GCC bank's performance.

This study contributes to the body of knowledge on IC in several ways. First, the study will extend the knowledge of IC performance and its utilization for increasing the financial performance of banks in GCC region, an emerging region which lacks such research; second, the study will shed light on the limited prior comparative IC research across the nations (Nimtrakoon, 2015; Young *et al.*, 2009) by assessing and comparing IC efficiency in the banking sector in GCC economies. This study seems to be the first comparative study across GCC countries. This gives an overview of IC performance of banking sector in developing countries. Third, it will provide empirical evidence on the relationship between IC and banks' financial performance by using data from listed banks in these countries.

By assessing IC performance of GCC banks, managers would be able to examine the success of their IC-related managerial decisions that have been taken places to better understand their management effectiveness and provides them with valuable reference for improving their performance. Also, it helps to measure the success of these decisions compared to their counterpart decisions during same period. Meanwhile, investors want to see how well a bank is performing in terms of IC before potentially investing in it. A high stock price alone is not enough measure to use; they have to see how well a bank is performing too.

The rest of this paper proceeds as follows: Section 2 discusses the literature related to the study, followed by hypotheses research. Section 4 describes the research method and data used in the study. Section 5 presents the research findings. Implications and limitations, future research directions and concluding remarks are discussed in Section 6.

2. Literature review

2.1 Definition, classification and measurements of intellectual capital

IC has been defined in many different ways (Wang *et al.*, 2014). Edvinsson and Sullivan (1996) define IC as knowledge that can be converted into value. Stewart (1997) broadens the definition of IC to the collection of knowledge, information, intellectual property rights and experience of each individual in a business entity. According to Edvinsson and Malone (1997), IC is the possession of the knowledge, applied experience, organizational technology, customer relationships and professional skills that provide a company with a competitive edge in the market. Zeghal and Maaloul (2010) define IC as the sum of all knowledge a company is able to use in the process of conducting businesses to create value for the company. The more recent definition of IC describes IC as "the group of knowledge assets that are owned and/or controlled by an organization

and most significantly drive organization value creation mechanisms for targeted company key stakeholders" (Alipour, 2012, p. 54). By summarizing prior literature, Chen *et al.* (2014, p. 414) conclude that IC may be defined as "knowledge-related intangible assets embedded in an organization that include intellectual competences, intellectual property, and intellectual resources".

Congruent to definition, classification of IC also lacks a general agreement among the theorists. There is, however, a broad consensus that IC consists of three main elements, namely, human capital (HC), structural capital (SC) and relational capital (Bhuyan, 2015; Alipour, 2012). More recent classification has been suggested by Schiuma *et al.* (2008), who broke IC down into five categories: HC, SC, organizational capital, social capital and stakeholder capital. The definition of IC provided by OECD (2000) implies classification of IC into two components; HC and SC. This classification of IC is similar with classifications provided by Stewart (1997) and Edvinsson and Malone (1997) and is also consistent with the VAIC methodology used in this study to measure IC performance. HC is defined as the knowledge, qualifications, experiences and skills of employees that they take with them when they leave the firm (Zeghal and Maaloul, 2010). SC refers to the knowledge that remains with a firm after the employees leave it at night. It includes production processes, organizations' management processes, organizational routines, procedures, systems, cultures and databases, information technology, customer relations and loyalty, supplier relation, firm brand and reputation, R&D, etc. (Zeghal and Maaloul, 2010).

In response to the need for IC valuation, different IC valuation methods have been proposed to measure IC and its performance. Sveiby (2010) reviews the current IC measurement methods and identifies 42 methods so far, and it is likely that more methodologies will arise. The VAIC methodology is widely used method and suggested by many researchers as the most appropriate method to measure IC performance. Pulic (1998) argues that previous IC measurement systems contains too much subjective evaluation and need thorough understanding of the status of a firm and require internal information which is customized to fit the profile of individual firm and may not be recorded by other firms. As a result, such evaluation does not enable comparison. Furthermore, previous IC measurement systems merely provide the asset values of IC of a business without reflecting its utilization efficiency (Young *et al.*, 2009).

2.2 Prior empirical studies about intellectual capital and business performance

There are host of studies on IC and business performance around the world and across industries. However, review of extent literature on IC and business performance reports mixed and inconclusive results. For example, Rahman (2012) and Zeghal and Maaloul (2010) in UK, Chen *et al.* (2010) and Riahi-Belkaoui (2003) in USA and Pulic (2004) in Australia revealed that there is a significant positive relationship between IC and firm performance. These results are in line with those obtained by studies that have been conducted in emerging economies and developing countries such as Mondal and Ghosh (2012) in India, Chu *et al.* (2011) in China (Hong Kong), Saengchan (2007) in Thailand, Alipour (2012) in Iran and Makki and Lodhi (2009) in Pakistan.

However, others have reported negative or weak relationship between IC and business performance. For instance, Kujansivu and Lonnqvist (2005) use a large sample of Finish companies. On a similar note, a research by Firer and Williams (2003) that has examined the relationship between IC and profitability among others, using a sample of

75 publicly traded companies in South Africa, did not find any significant association between IC and firms' profitability, concluding that physical capital remains the most significant underlying resource of corporate performance in South Africa. The same results are arrived by Muhammad and Ismail (2009) in Malaysia and Puntilo (2009) in Italy. In a recent study, Mention and Bontis (2013) on the banking sector in Luxembourg and Belgium reveal that HC contributes both directly and indirectly to business performance in the banking sector. However, the same is not significant in case of SC and performance.

2.2.1 Intellectual capital research in Gulf Cooperation Council region. Generally speaking, IC-related research is still at its primitive stages in GCC region. Scholars have covered topics such as knowledge management, IC performance measurement (Abdul Salam *et al.*, 2011), corporate governance and IC performance (Al-Musali and Ku Ismail, 2012 and 2015), IC reporting and disclosure (Ishak and Al-Ebel, 2013) and IC and business performance (Ku Ismail and Abdul Karem, 2011).

3. Research hypotheses

In the theoretical sense, the concept of IC mostly relies on the resource-based theory of firm and its variation – the concept of dynamic and core capabilities (Komnenic and Pokrajcic, 2012). The resource-based view of the firm argues that differences in profitability across firms can be explained by differences in their portfolio of resources and how these resources are articulated. More recently, the knowledge-based theory, that has been advanced as one specific aspect of resource-based theory, claims that IC is the only source of competitive advantage and value added to the firm, because it is difficult to imitate and substitute, whereas physical capital is generic resource, easily imitable and substitutable and can be easily purchased and sold in the open market (Reed *et al.*, 2006).

This new understanding shows that the management and development of IC confers greater competitive advantage, thus improving company performance. IC can improve the financial performance through knowledge, experiences, skills of employees and also by defining new methods of task performance and being innovative in their processes. As highlighted earlier, the positive association between IC performance and corporate performance has been observed by many scholars such as Ku Ismail and Abdul Karem (2011), Zeghal and Maaloul (2010) and Shiu (2006). Therefore, as the IC represent bank's most important strategic resource, the present study expects that IC and its components to be positively associated with financial performance indicators of banks in GCC region for the period from 2008 to 2010, and the following hypotheses is proposed:

H1. Banks with greater IC have better financial performance.

HC is viewed as the most important component of IC (Pulic, 2008). It has been argued that companies could gain and retain competitive advantage when there are great human talents, capabilities, boundless innovations and creativity. Great human talents can make the difference between efficiency and inefficiency and between profit and loss. Marques *et al.* (2006) assert that the role of HC is valuable in knowledge-intensive industries. Their ability to create new knowledge applied to products or processes determines significantly the performance of the firms. It has been argued that HC may play an important role in generation of innovative activities that ultimately could enhance bank financial performance. However, researchers such as Youndt (1998) and

Mondal and Ghosh (2012) argue that influence of HC on organizational performance is uncertain. So, it is necessary to examine empirically whether HC influences financial performance. Thus, the following sub-hypotheses is proposed:

H1a. Banks with greater human capital efficiency have better financial performance.

The SC can play an important role in improving profitability, as it is crucial to generate higher quality, lower operating expenses and improving efficiency (Wang *et al.*, 2014; Mondal and Ghosh, 2012; Chu *et al.*, 2011). According to Mondal and Ghosh (2012), well-trained and motivated employees can do nothing without proper and effective organizational culture, rules and procedures. The ability of a company to apply computer systems and procedures can help companies to capture additional business opportunities and explore revenue sources. In addition, efficiency of customer capital as one component of SC can be improved by maintaining a good relationship with customers and enlarge customer base. Consequently, firm's financial performance will be enhanced. Wang *et al.* (2014) and Chu *et al.* (2011) found that SC efficiency (SCE) had an increasingly prominent role in predicting corporate financial performance, thus signifying the importance of SC. Thus, the following sub-hypothesis is proposed:

H1b. Banks with greater structural capital efficiency have better financial performance.

Although IC is a key factor in creating value and determines the quality of services provided by banks to customers, physical capital is still essential for banks to operate (Goh, 2005). According to Pulic (1998), IC cannot exit and create value without minimum amount of tangible capital. Additionally, physical capital employed efficiency (CEE) has been found to have a significant positive impact on organizational financial performance (Chan, 2009). Therefore, this relationship is also hypothesized:

H1c. Banks with greater capital employed efficiency have better financial performance.

4. Research method

4.1 Data description

The data for this study comprise the population of the listed commercial banks in GCC countries over a three-year period (2008–2010) derived from the banks' annual reports.

By focusing on a single study, issues such as the impact of industry structure and rivalry on financial performance can be eliminated. In addition, the socio-economic structure among the GCC countries is similar (Arouri *et al.*, 2011), which enables this study to control the effect of their macro and cultural factors, leading to a more meaningful interpretation.

After eliminating observations with outliers (five observations), 214 observations in the six sample countries were available for analysis, and the sample distribution is shown in Table I. In Table I, UAE has the most number of commercial banks, whereas Oman has the least. The number of sample commercial Islamic banks in Oman is zero, because there are no Islamic banks operating in Oman.

Table I. Distribution of sample banks

Country	Years 2008 Islamic banks	2008 Conventional banks	2009 Islamic banks	2009 Conventional banks	2010 Islamic banks	2010 Conventional banks	Total
Bahrain	5	10	4	10	4	11	44
Kuwait	3	5	3	6	3	6	26
Oman	0	6	0	6	0	6	18
Qatar	3	5	3	5	3	5	24
Saudi Arabia	4	7	4	7	4	7	33
UAE	7	16	7	16	7	16	69
Total	22	49	21	50	21	52	224

4.2 Definition of variables

4.2.1 Dependent variables. Two measures of financial performance are taken as dependent variables for regression equations. In accordance with the existing research studies on VAIC, two measures of firm performance are being widely considered – return on assets (ROA) (Firer and Williams, 2003; Shiu, 2006; Kamath, 2008; Mehralian *et al.*, 2012; Mondal and Ghosh, 2012) and return on equity (ROE) (Mondal and Ghosh, 2012; El-Bannany, 2008).

ROA reflects the efficiency of utilizing available assets in creating profits and is calculated as the annual net profit of individual bank before tax divided by average total assets. ROE represents return generation on common stocks of shareholders and is recognized as an important financial indicator for owners. ROE is calculated as the annual net profit of individual bank before tax divided by average shareholders' equity.

4.2.2 Independent variables. This study applies the VAIC method to measure the IC performance of banks. To test whether IC (as measured by VAIC or its components) is a significant driving factor of bank success (as measured by bank financial indicators, namely, ROE and ROA), ordinary least squares regression, which is similar to that found in previous studies (Shiu, 2006), is used. VAIC is built on the assumption that value creation is the function of both IC and physical and financial capital, where IC is a dependent variable on physical and financial capital, i.e. IC alone cannot generate any value (Pulic, 2004). Therefore, VAIC is the sum of HC efficiency (HCE), SCE and CEE. As a performance indicator, the higher the VAIC, the better is the bank's IC performance (Young *et al.*, 2009).

Algebraically, VAIC is expressed as follows:

$$\text{VAIC} = \text{CEE} + \text{HCE} + \text{SCE}, \tag{1}$$

where CEE is an indicator of value added efficiency of capital employed; HCE is an indicator of value added efficiency of HC; SCE is an indicator of value added efficiency of SC. The calculation of the CEE, HCE and SCE follows a number of different steps. The first step is to calculate the firm's ability to create value added (VA), which is calculated as:

$$\text{VA} = \text{OUTPUT} - \text{INPUT}. \tag{2}$$

Output refers to gross income or the total of all income/revenue generated during the fiscal year by an organization by selling its goods or services. Input includes operating expenses, excluding personal costs. Input refers to all the costs that are incurred by the organization toward purchase of inputs for operating and continuing the business. Here, the employees' compensation and other costs incurred on them for training and development (that is called personal costs) would be deducted from total expenses for the simple reason that they would be treated as investments and not expenditure (Pulic, 2004). Pulic (1998) argues that staff costs should be considered as an indicator of HC.

Pulic (2004) simplifies the calculation of total value added by using information contained in the annual report as follows:

$$VA = OP + EC + D + A, \tag{3}$$

where OP = operating Profits; EC = total Employee cost; D = depreciation and A = amortization.

The second step is to calculate the value added efficiency of HCE by dividing the total value added over HC.

$$HCE = VA \div HC. \tag{4}$$

HCE is expressed as the amount of VA generated per monetary unit invested in employees. As highlighted earlier, under VAIC methodology, staff costs are treated as an investment, not as a cost. Thus, the relation between VA and HC indicates the ability of HC to create value in a company.

The third step is to calculate the value added efficiency of SC that shows the contribution of SC in value creation by dividing the SC over the total value added.

$$SCE = SC \div VA \tag{5}$$

According to the methodology, SC is a result of HC's past performance (organization, licenses, patents, image, standards and relationship with customers). SC may be viewed as a contribution to the value creation process for a given period (Komnenic and Pokrajcic, 2012). Pulic (2004) states that SC is obtained when HC is deducted from VA (i.e. SC = VA − HC). As this equation indicates, this form of capital is not an independent indicator. Indeed, it is dependent on the created VA and is in reverse proportion to HC. This means that the bigger the share of HC in the created VA, the smaller the share of SC. This explains why SCE is obtained in different way.

The fourth step is to calculate CEE by dividing the total value added over capital employed (CE).

$$CEE = VA \div CE \tag{6}$$

CE refers to financial and physical capital of a firm [i.e. book value of the net tangible assets of a firm (Pulic, 2004]. CEE is expressed as the amount of value-added generated per monetary unit invested in CE. According to Pulic (2004), IC is a dependent variable on physical and financial capital, i.e. IC alone cannot generate any value. Hence, CE cannot be ignored in constructing IC performance index (El-Bannany, 2008).

4.2.3 Control variables. To be consistent with prior studies (Chan, 2009; Shiu, 2006), bank size (measured as the total assets) is included in regression as a control variable to

minimize its interaction with dependent variables. We further set a dummy variable for the global financial crisis (CRIS), whose value is 1 for the years of 2008 and 2009, and zero otherwise, to observe its influence on different GCC countries.

At first, the correlation analysis was applied to determine whether there is any correlation between the ROA and ROE of the bank and the VAIC and its components[1].

Then, the multiple linear regression analysis was used to find out the strength of relationship between the variables and also to discover the factor among the various elements of IC which has significant impact on the ROA and ROE of GCC banks.

Models 1 and 2 examines the association between VAIC and the two financial performance indicators, and Models 3 and 4 replaced the aggregate IC measure with three components of VAIC (Table II). The bank size and global financial crisis are included as control variables in all models. This study undertook normality, linearity, homogeneity, autocorrelation and multicollinearity tests[2] to ensure the quality of data and variables.

5. Findings

5.1 Intellectual capital performance

Table III shows the IC performance results for the commercial banks in the six countries from 2008 to 2010. For this period, commercial banks in Qatar on average had the highest VAIC value of 8.191. Their values for HCE, SCE and CEE are 7.339, 0.813 and

Model	Regression equation
1	$ROE = \beta i + \beta_1 VAIC + \beta_2 SIZE + \beta_3 CRISIS + \varepsilon$
2	$ROA = \beta i + \beta_1 VAIC + \beta_2 SIZE + \beta_3 CRISIS + \varepsilon$
3	$ROE = \beta i + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE + \beta_4 SIZE + \beta_5 CRISIS + \varepsilon$
4	$ROA = \beta i + \beta_1 HCE + \beta_2 SCE + \beta_3 CEE + \beta_4 SIZE + \beta_5 CRISIS + \varepsilon$

Table II.

			Country				
Years	Coefficient	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
2008	HCE	2.124	2.086	2.906	7.443	3.417	3.930
	SCE	0.865	0.770	0.481	0.801	0.644	0.630
	CEE	0.025	0.193	0.027	0.440	0.027	0.400
	VAIC	3.013	2.875	3.414	8.288	4.089	4.601
2009	HCE	0.502	2.539	2.874	6.927	2.917	3.431
	SCE	1.079	0.175	0.632	0.803	0.384	0.558
	CEE	−0.074	0.183	0.025	0.037	0.025	0.033
	VAIC	1.507	2.897	3.531	7.766	3.326	4.023
2010	HCE	0.779	2.859	2.896	7.647	2.958	3.677
	SCE	1.063	0.168	0.634	0.835	0.540	0.672
	CEE	−0.012	0.021	0.028	0.038	0.024	0.033
	VAIC	1.853	3.499	3.558	8.519	3.522	4.382
2008-2010	HCE	1.149	2.495	2.892	7.339	3.097	3.680
	SCE	1.001	0.521	0.583	0.813	0.523	0.620
	CEE	−0.011	0.075	0.027	0.039	0.025	0.035
	VAIC	2.138	3.090	3.501	8.191	3.646	4.335

Table III.
IC performance of the banks in the six GCC countries during the period 2008-2010

0.039, respectively. Qatari commercial banks also had the highest HC efficiency among the banks studied. Commercial banks in UAE on average had the second highest VAIC value of 4.335 in the research period, followed by Saudi Arabia, Oman and Kuwait, with VAIC values of 3.646, 3.501 and 3.090, respectively. Banks in Bahrain had the lowest VAIC value of 2.138, with HCE, SCE and CEE at 1.149, 1.001 and −0.011, respectively.

They also had the lowest HCE among the banks studied. However, although their VAIC, HCE and CEE values are unsatisfactory, banks in Bahrain had the highest SC efficiency among the banks studied, suggesting room for improvement such as more effort into improving the value creation efficiency of HC and CE. It is also interesting to note that no obvious significant difference is observed among GCC banks in terms of their SC efficiency and CE efficiency. Therefore, banks' HC efficiency is the main driver of IC performance compared with SCE and CEE. This finding is consistent with Goh (2005) and Mondal and Ghosh (2012), among others, who find that the performance of HC is higher than physical and SC for Malaysian and Indian banks, respectively.

Table III shows the trend of value added creation efficiency over the three years. Banks in Kuwait and Oman have shown increasing trend of VAIC from the year 2008 to 2010, which indicate a continuous improvement in value creation efficiency levels of banks in both countries, but in 2009, all the remaining four countries in GCC region (Bahrain, Qatar, Saudi Arabia and UAE) experienced a decline in the value creation efficiency of their banking system, albeit with different degree, reflecting probably the adverse impacts of global financial crisis on banking sectors in these GCC counties, especially in Bahrain, given this country's close linkages with global equity and credit markets. However, IC performance of banks had increased in 2010 in all these four countries, reflecting probably success of intervention policies taken by GCC governments to mitigate the adverse impact of the global financial crisis on the GCC banking industry.

5.2 Regression results

Table IV summarizes the linear regression results for Models 1-4. The results reveal that all four regression models have high statistical significance and high explanatory power in all the GCC six countries. However, when compared with regressions using VAIC as an aggregate measurement (Models 1 and 2), the explanatory power of models using the three VAIC components (Models 3 and 4) showed substantial increases, suggesting that stakeholders and managers may have emphasized on various aspects or components of IC differently (Firer and Williams, 2003).

Results of Model 1 and 2 presented in Table IV show a very strong positive association between VAIC and both financial performance indicators (ROE and ROA) of commercial banks in all GCC countries for the years 2008-2010. These results are consistent with prior findings by Saengchan (2007) and Ku Ismail and Abdul Karem (2011) who find a positive association between IC performance and the financial performance of banks. The aggregated results from regression Models 1 and 2 tend to focus VAIC as a predictor of banks' intellectual efficiency in all GCC countries and as such provide support to our expectation which implies that banks with greater IC performance tend to have higher financial performance, *ceteris paribus*.

Table IV.
Multiple regression results for Models 1-4 for banks in individual economies

Independent variables	Dependent variables: ROE and ROA							
	Bahrain ($n = 44$)				Kuwait ($n = 26$)			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Intercept	−0.204*** (−5.327)	−0.047*** (−3.816)	−0.087*** (−1.947)*	−0.018 (−1.142)	0.079* (1.770)	0.023 (1.477)	−2.260 (0.000)	−0.002 (−0.092)
VAIC	0.864*** (10.508)	0.763*** (7.236)			0.874*** (5.568)	0.881*** (5.863)		
HCE			0.942*** (9.459)	0.777*** (5.542)			0.410 (1.654)	0.384 (1.487)
SCE			0.011 (0.131)	−0.021 (−0.177)			0.766*** (2.965)	0.602** (2.242)
CEE			−0.241 (−0.021)	0.054 (0.453)			−0.366* (−1.793)	−0.078 (−0.370)
Size	0.055 (0.681)	0.058 (0.556)	−0.017 (−0.233)	−0.005 (−0.053)	−0.200*** (−1.295)	−0.138*** (−0.937)	−0.095 (−0.655)	−0.098 (−0.655)
Crisis	−0.089 (1.102)	−1.100 (−0.114)	−0.111 (−1.561)	−0.120 (−1.202)	−0.093*** (−0.645)	−0.123*** (−0.878)	0.031 (0.230)	−0.041 (−0.289)
Adjusted R^2	0.730	0.556	0.803	0.610	0.584	0.618	0.675	0.648
Model F	38.907	18.509	32.271	14.130	10.808	12.345	9.731	8.743
Significance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Note: Standardized coefficients are shown in the table, except for the intercepts. Values in parentheses are t-values

(*continued*)

Independent variables	Dependent variables: ROE and ROA							
	Oman (n = 18)				Qatar (n = 24)			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Intercept	−0.014 (−0.563)	−0.003** (1.048)	−0.053** (−2.448)	−0.01*** (−6.143)	0.076 (1.886)*	0.010 (1.300)	−0.236** (2.879)	−0.034** (−3.088)
VAIC	0.873*** (6.617)	0.933*** (7.869)			0.416 (2.249)**	0.687*** (4.238)		
HCE			0.396** (2.683)	0.415*** (5.486)			−0.604 (−1.696)	−0.73*** (−3.323)
SCE							0.995*** (4.162)	0.407** (2.740)
CEE			0.586*** (4.102)	0.649*** (8.870)			0.278 (0.911)	1.314*** (6.937)
Size	−0.004 (−0.027)	−0.170 (−1.434)	0.114 (1.103)	−0.043 (−0.813)	0.348 (1.871)*	−0.174 (−1.070)	0.301 (1.633)	0.265** (2.318)
Crisis	−0.083 (−0.650)	0.010 (0.087)	−0.062 (−0.644)	0.034 (0.692)	0.135 (0.729)	0.056 (0.343)	0.155 (1.082)	−0.051 (−0.576)
Adjusted R^2	0.724	0.777	0.845	0.959	0.221	0.402	0.557	0.829
Model F	15.868	20.772	24.179	101.327	3.178	6.158	6.776	23.358
Significance	0.000	0.000	0.000	0.000	0.046	0.004	0.001	0.000

(*continued*)

Table IV.

Table IV.

Independent variables	Dependent variables: ROE and ROA							
	Saudi Arabia (n= 33)				UAE (n = 69)			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
Intercept	−0.06*** (−3.518)	−0.006** (−2.437)	−0.076** (2.653)	−0.012*** (−3.677)	0.022 (0.727)	0.002 (0.269)	0.102*** (2.891)	0.004 (0.716)
VAIC	0.834*** (6.658)	0.898*** (6.045)			0.324*** (2.782)	0.329*** (2.799)		
HCE			0.724*** (3.364)	0.447** (2.233)			−0.25*** (−1.965)	−0.204** (2.028)
SCE			0.020 (0.130)	0.127 (0.869)			0.515*** (4.059)	0.303*** (3.036)
CEE			0.153 (1.510)	0.455*** (4.827)			0.427*** (4.195)	0.743*** (9.274)
Size	0.100 (0.800)	−0.012 (−0.083)	0.070 (0.483)	0.002 (0.015)	0.272** (2.332)	0.231** (1.962)	0.196*** (2.024)	0.091 (1.193)
Crisis	0.087 (1.236)	0.071 (0.850)	0.078*** (0.981)	0.054 (0.733)	0.115 (1.010)	0.083 (0.724)	0.159*** (1.665)	0.061 (0.820)
Adjusted R^2	0.843	0.779	0.818	0.842	0.116	0.097	0.423	0.644
Model F	58.347	38.669	28.805	34.047	3.971	3.438	10.840	25.214
Significance	0.000	0.000	0.000	0.000	0.012	0.022	0.000	0.000

VAIC is further split into its three components and put into the regression equation to predict ROE and ROA (Model 3 and 4; shown in Table IV). The results show a significant positive relationship between HCE and both financial performance indicators of banks in Bahrain, Oman and Saudi Arabia. The result is consistent with prior findings by Kamath (2008), Mondal and Ghosh (2012) and Komnenic and Pokrajcic (2012), among others. In contrast, HCE has shown a significant negative association with both financial performance indicators of banks in UAE. HCE has shown insignificant association with financial performance indicators of banks in Kuwait. These unexpected findings in UAE and Kuwait are, however, consistent with those found by Chu *et al.* (2011) and Muhammad and Ismail (2009) and could be attributed to employees' lacking of training. As Chu *et al.* (2011) further argued, this unexpected finding could be attributed to that investors may have consistently regarded expenditure incurred in cultivating human resources as cost with no short-term benefits and reacted negatively toward firms with high employee-related expenditure.

In Qatar, although HCE has no association with banks' ROE, it has a significant negative association with ROA. Consistent with finding obtained by Wang *et al.* (2014) and Chu *et al.* (2011), SCE has shown significant associations with financial performance indicators of banks in Kuwait, Qatar and UAE only.

In terms of CEE, a significant positive relationship is found between CEE and banks' ROE in Kuwait, Oman and UAE only, whereas it has shown significant associations with ROA in Oman, Qatar, Saudi Arabia and UAE only.

Finally, with regard to control variables, empirical findings indicate that global financial crisis has no impact on financial performance indicators of commercial banks in all GCC countries. The insignificant effect of global financial crisis on financial performance of GCC banks may be attributed to the macro intervention policies taken by GCC governments which help to mitigate the adverse impact of the current global financial crisis. According to Khamis and Senhadji (2010), despite the sharp decline in oil revenues, GCC governments maintained or even increased spending levels to offset the fallout from the crisis. The intervention policies taken by GCC governments may create atmosphere of confidence among GCC banks and help them continue to implement their activities normally.

6. Discussion and concluding remarks

Comparing IC performance in banking across the six studied countries from 2008 to 2010, this study observes on average the best IC performance in Qatar and the least in Bahrain. However, when compared to Qatar, the remaining countries of the GCC region (UAE, Saudi Arabia, Oman and Kuwait) have shown lower level of IC performance to a large extent, exhibiting signs of redundant and non-performing resources and suggesting the need for restructuring to increase value creation efficiency. It seems that efforts undertaken by the Qatar Government to establish the country as a regional financial center are supported by a rising trend in banks' efficiency.

Consistent with prior literature (Ku Ismail and Abdul Karem, 2011; Abdul Salam *et al.*, 2011), the results indicate that the efficiency in utilizing HC is the main reason for the high IC performance demonstrated by Qatari banks, as there is no obvious difference between Qatari banks and banks in the remaining GCC countries in terms

of value creation efficiency from SC and CE. In other words, the major contribution to the VAIC is mainly from HC compared to SC and CE, indicating the efficiency of HC. It seems that banks that can better use their HC tend to be most likely to survive.

Regression findings support the significant role of IC in creating value for stockholders and for other stakeholders and provide strong support to the arguments that IC is a valuable resource for a company's competitive advantages and will contribute to the company's financial performance. However, when VAIC is split into its three components, the relationships between HCE, SCE, CEE and bank financial performance indicators are varied and different from one country to another. The results of this study reveal that VAIC and its components (SCE and CEE) are positively associated with financial performance indicators of banks in UAE. However, CE (i.e. physical and financial capital) exerted higher degrees of influence on financial performance than SC, as their standardized coefficient value is greater than that of SC. This result implies that physical capital influences more on financial performance of UAE banks than SC. However, the significantly negative association between HCE and both financial performance indicators of UAE's banks seems to suggest that the managers failed to utilize HC efficiently to meet the expectations of stakeholders who have financed total assets of the bank.

Banks in Bahrain appeared to be solely relying on HC to improve bank profitability, as SC and CE have shown insignificant influence on both ROE and ROA. This gives an indication that the commercial banks in Bahrain put less effort in the development of SC and CE as compared with HC.

Similar to their sister banks in Bahrain, commercial banks in Saudi Arabia appeared to be solely relying on HC, a key component of IC, as a way to enhance return for shareholders (i.e. ROE). HCE and CEE both have found to have significantly positive associations with Saudi Arabia's ROA. However, physical and financial capital exerted higher degrees of influence on ROA than HC, as their standardized coefficient value is greater than that of HC.

Regarding commercial banks in Oman, this study finds that financial performance indicators of banks in Oman have a strong significant positive relationship with HCE and CEE. However, similar to their sister banks in other GCC countries, except Kuwait, physical and financial capital exerted higher degrees of influence on financial performance indicators of Omani banks than HC, as their standardized coefficient value is greater than that of HC.

Banks in Kuwait appeared to be mainly relying on SC, another key component of IC, and to lesser extent on physical and financial capital as a way to enhance return for shareholders. Arguably, banks in Kuwait may tend to invest in SC such as computer systems, routines and automated procedures with the intention to automate labor-intensive operations to improve operating efficiency and reduce costs incurred in operations, rather than investing in human resources which involves a considerable level of uncertainty and risk and the lengthy payback periods to payoff, if any (Edvinsson and Malone, 1997; Brooking, 1996). This reason may interpret the insignificant relationship between HC and financial performance of banks in Kuwait. Moreover, in contrast to their counterparts in all GCC countries, CE has shown a lower influence on ROE than IC resources (i.e. SC), as its standardized coefficient value is lesser than that of SC.

Finally, commercial banks in Qatar have shown a sole reliance on SC, a key component of IC, as a way to enhance return for shareholders (i.e. ROE). Regarding ROA, SCE and CEE both have shown significant positive relationship with ROA, with greater influence of CEE than SCE. However, the significantly negative association between HCE and ROA of Qatari banks seems to suggest that banks in Qatar may not be able to use their HC to extract more returns from their tangible assets and justify the increase in total tangible assets.

Overall, results of regression analysis of Models 3 and 4, which involve the three VAIC components, indicate that managers of GCC banks are not able to realize the full potential of the two bank's IC elements (i.e. HC and SC) to maximize the stakeholder's benefit.

In addition, except Kuwait, bank's profitability in all other GCC countries has been created more by CEE (physical and financial) rather than HCE or SCE. This result is consistent with those reported by Mehralian *et al.* (2012) in Iran, Muhammad and Ismail (2009) in Malaysia, Ku Ismail and Abdul Karem (2011) in Bahrain and Firer and Williams (2003) in South Africa, among others, suggesting that tangible assets remain the most significant underlying resource of bank financial performance in those countries.

6.1 Theoretical implications

Using the resource-based view, this study shows how knowledge-based resources combined with tangible and financial resources provides the means to improve the financial performance in banking. Although from knowledge-based view, perspective-tangible assets were not considered to be key sources of competitive advantage, the resource-based view, as argued by Holland (2010), would expect that intangibles and their impact on tangibles (especially intermediation) would be the primary source of sustainable competitive advantage for banks. To sum up, the resource-based view still offers a framework for analyzing inter-firm variations in performance and emphasizes that the integration or combination of different types of resources is more likely to contribute to a firm's sustainable competitive advantage.

6.2 Practical implications

Although findings of this study clearly establish the importance of IC in enhancing GCC banks' profitability, the findings of the present study serve as a wake-up call for GCC managers to start to enquire for the logical factors that can show reasons of non-existent perfect relationship between the financial performances of GCC banks with their IC components. It is recommended that GCC banks should identify key people and train them to deliver high HCE, as the continuous training program is a vital tool for employees and managers' performance. The above results also identify that there is an urgent need to develop the value creation efficiency of SC as another important component of IC. As suggested by Mehralian *et al.* (2012), one of the best policies for emerging and developing countries to empower SC is realizing the value of technological knowledge (know-how) and how they can maintain it. Concurrently, GCC banks should take into account the addition of the position of Chief Intellectual Capital Management Officer on their organizational chart to help structuring relevant strategies and policies on how to obtain and best utilize the required

resources underlying IC. Increasing their investment in collaborative information technology tools may be one of the best strategies. The IC disclosure should be considered by GCC banks as one of the top management priorities to monitor this phenomenon. The findings also could help policy makers in GCC region to formulate and implement policies for establishment of a resilient banking sector by addressing the factors affecting the banks' financial performance and to take actions to maximize their value creation.

6.3 Limitations and future research

One potential limitation of our study is that the sample is drawn from a population of only GCC listed banks. Moreover, the analysis covers information from only three years. Further studies should seek to have larger span of time that may add further insights and realize better understanding of the IC performance. Furthermore, future research should consider the introduction of other control variables, which may help in obtaining more precise and accurate results. Finally, it is debatable whether the chosen method (VAIC) is appropriate for measuring IC performance. However, as mentioned earlier, at this point in time, there are no perfect approaches available for measuring IC performance. Future study can be conducted with a different IC measurement model.

Notes

1. Correlation results are not reported here to save space, but they are available from the authors upon request.
2. These tests are not reported here to save space, but they are available from the authors upon request.

References

Abdul Salam, F., Al-Qaheri, H. and Al-Khayyat, R. (2011), "The intellectual capital performance of Kuwaiti banks: an application of VAIC model", available at: www.SciRP.org/journal/ib

Ahuja, B.R. and Ahuja, N.L. (2012), "Intellectual capital approach to performance evaluation: a case study of the banking sector in India", *International Research Journal of Finance and Economics*, Vol. 93 No. 1, pp. 110-122.

Alipour, M. (2012), "The effect of intellectual capital on firm performance: an investigation of Iran insurance companies", *Measuring Business Excellence*, Vol. 16 No. 1, pp. 53-66.

Al-Musali, M.A. and Ku Ismail, K.N.I. (2012), "Corporate governance, bank specific characteristics, banking industry characteristics, and intellectual capital performance of banks in Arab Gulf Cooperation Council countries", *Asian Academy of Management, Journal of Accounting and Finance*, special issue, Vol. 8 No. 1, pp. 115-135.

Al-Musali, M.A. and Ku Ismail, K.N.I. (2015), "Board diversity and intellectual capital performance: the moderating role of the effectiveness of board meetings", *Accounting Research Journal*, Vol. 28 No. 3, pp. 268-283.

Al-Obaidan, A.M. (2008), "Market structure concentration and performance in the commercial banking industry of emerging markets", *European Journal of Economics, Finance and Administrative Sciences*, Vol. 12, pp. 104-115.

Andriessen, D. (2004), *Making Sense of Intellectual Capital: Designing A Method for the Valuation of Intangibles*, 1st ed., Elsevier, Amsterdam.

Bhuyan, R.A.M. (2015), "Examining the influence of corporate governance on intellectual capital efficiency: evidence from top service firms in Australia", *Managerial Auditing Journal*, Vol. 30 Nos 4/5.

Brooking, A. (1996), *Intellectual capital: Core Asset for the Third Millennium Enterprise*, 1st ed., International Thomson Business Press, Bingley.

Chan, K.H. (2009), "Impact of intellectual capital on organizational performance: an empirical study of companies in the Hang Seng Index", *The learning Organization*, Vol. 16 No. 1, pp. 4-21.

Chen, F.C., Liu, Z.J. and Kweh, Q.l (2014), "Intellectual capital and productivity of Malaysian general insurers", *Economic Modelling*, Vol. 36 No. 3, pp. 413-420.

Chen, M.Y., Lin, J.Y., Hsiao, T.Y. and Lin, T.W. (2010), "Invested resource, competitive intellectual capital, and corporate performance", *Journal of Intellectual Capital*, Vol. 11 No. 4, pp. 433-450.

Chu, S.K.W., Chan, K.H. and Wu, W.W.Y. (2011), "Charting intellectual capital performance of the gateway to China", *Journal of Intellectual Capital*, Vol. 12 No. 2, pp. 249-276.

Edvinsson, L. and Malone, M.S. (1997), *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower*, Harper Business, New York, NY.

Edvinsson, L. and Sullivan, P. (1996), "Developing a model for managing intellectual capital", *European Management Journal*, Vol. 14 No. 4, pp. 356-364.

El-Bannany, M. (2008), "A study of determinants of intellectual capital performance in banks: the UK case", *Journal of Intellectual Capital*, Vol. 9 No. 3, pp. 487-498.

Firer, S. and Williams, S.M. (2003), "Intellectual capital and traditional measures of corporate performance", *Journal of Intellectual Capital*, Vol. 4 No. 3, pp. 348-360.

Goh, P.C. (2005), "Intellectual capital performance of commercial banks in Malaysia", *Journal of Intellectual Capital*, Vol. 6 No. 3, pp. 385-396.

Ishak, Z. and Al-Ebel, A.M. (2013), "Board of directors, information asymmetry, and intellectual capital disclosure among banks in Gulf Co-Operation Council", *Journal Pengurusan*, Vol. 37 No. 1, pp. 33-43.

Kamath, G.B. (2008), "Intellectual capital and corporate performance in Indian pharmaceutical industry", *Journal of Intellectual Capital*, Vol. 9 No. 4, pp. 684-704.

Khamis, M. and Senhadji, A. (2010), *Impact of the Global Financial Crisis on the Gulf Cooperation Council Countries and Challenges Ahead: An Update*, International Monetary Fund, Publication Services, WA.

Komnenic, B. and Pokrajcic, D. (2012), "Intellectual capital and corporate performance of MNCs in Serbia", *Journal of Intellectual Capital*, Vol. 13 No. 1, pp. 106-119.

Ku Ismail, K.N.I. and Abdul Karem, M. (2011), "Intellectual capital and the financial performance of banks in Bahrain", *Journal of Business Management and Accounting*, Vol. 1 No. 1, pp. 63-77.

Kujansivu, P. and Lonnqvist, A. (2005), "How do investments in intellectual capital create profits?", *Frontiers of E-business Research*, Vol. 8 No. 2, pp. 304-318.

Makki, M.A. and Lodhi, S.A. (2009), "Impact of intellectual capital on return on investment in Pakistani corporate sector", *Australian Journal of Basic and Applied Sciences*, Vol. 3 No. 3, pp. 2995-3007.

Mehralian, G., Rajabzadeh, A., Sadeh, M.R. and Rasekh, H.R. (2012), "Intellectual capital and corporate performance in Iranian pharmaceutical industry", *Journal of Intellectual Capital*, Vol. 13 No. 1, pp. 138-158.

Mention, A.L. and Bontis, B. (2013), "Intellectual capital and performance within the banking sector of Luxembourg and Belgium", *Journal of Intellectual Capital*, Vol. 14 No. 2, pp. 286-309.

Muhammad, N.M.N. and Ismail, M.K.A. (2009), "Intellectual capital efficiency and firms performance study in Malaysian financial sector", *International Journal of Economics and Finance*, Vol. 1 No. 2, pp. 206-212.

Nimtrakoon, S. (2015), "The relationship between intellectual capital, firms' market value and financial performance: empirical evidence from the ASEAN", *Journal of Intellectual Capital*, Vol. 16 No. 3.

Organization of economic cooperation and development (OECD) (2000), "Final Report: Measuring and reporting intellectual capital", Paris.

Pulic, A. (1998), "Measuring the performance of intellectual potential in knowledge economy", available at: www.measuringip.at/Opapers/Pulic/Vaictxt.vaictxt.html

Pulic, A. (2004), "Intellectual capital-does it create or destroy value?", *Measuring Business Excellence*, Vol. 8 No. 1, pp. 62-68.

Puntilo, P. (2009), "Intellectual capital and business performance: evidence from Italian banking industry", *Journal of Corporate Finance*, Vol. 12 No. 4, pp. 97-115.

Rahman, S. (2012), "The role of intellectual capital in determining differences between stock market and financial performance", *International Research Journal of Finance and Economics*, Vol. 89, pp. 46-77.

Reed, K.K., Lubatkin, M. and Srinivasan, N. (2006), "Proposing and testing an intellectual capital-based view of the firm", *Journal of Management Studies*, Vol. 43 No. 4, pp. 867-893.

Riahi-Belkaoui, A. (2003), "Intellectual capital and firm performance of US multinational firms", *Journal of Intellectual Capital*, Vol. 4 No. 2, pp. 215-226.

Saengchan, S. (2007), "The role of intellectual capital in creating value in banking industry", *Journal of Knowledge Management*, Vol. 3 No. 2, pp. 15-25.

Schiuma, G., Lerro, A. and Sanitate, D. (2008), "The intellectual capital dimensions of Ducati's turnaround: exploring knowledge assets grounding a change management program", *International Journal of Innovation Management*, Vol. 12 No. 2, pp. 161-193.

Shiu, H.J. (2006), "The application of the value added intellectual coefficient to measure corporate performance: evidence from technological firms", *International Journal of Management*, Vol. 23 No. 2, pp. 356-365.

Stewart, T.A. (1997), *Intellectual Capital: The New Wealth of Organizations*, Doubleday Dell Publishing Group, New York, NY.

Sveiby, K.E. (2010), "Method of measuring intangible assets", pp. 1-8, available at: www.sveiby.com/articles/IntangibleMethods.htm (accessed August 2010).

Wang, Z., Wang, N. and Liang, H. (2014), "Knowledge sharing, intellectual capital and firm performance", *Management Decision*, Vol. 52 No. 2, pp. 230-258.

Young, C.H., Su, H.W., Fang, S.H. and Fang, S.R. (2009), "Cross-country comparison of intellectual capital performance of commercial banks in Asian economies", *The Service Industries Journal*, Vol. 29 No. 11, pp. 1565-1579.

Zeghal, D. and Maaloul, A. (2010), "Analyzing value added as an indicator of intellectual capital and its consequences on company performance", *Journal of Intellectual Capital*, Vol. 11 No. 1, pp. 39-60.

Further reading

Wang, M. (2011), "Measuring intellectual capital and its effect on financial performance: evidence from the capital market in Taiwan", *Frontiers of Business Research in China*, Vol. 5 No. 2, pp. 243-265.

Youndt, M.A., Subramaniam, M. and Snell, S.A. (2004), "Intellectual capital profiles: an examination of investments and returns", *Journal of Management Studies*, Vol. 41 No. 2, pp. 335-361.

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